IATA AVIATION DATA SYMPOSIUM

ATHENS, GREECE 25 – 27 JUNE 2019

SAFETY & FLIGHT OPERATIONS

IATA

Introduction
&
Opening Remarks

Chris Markou, Head Operational Cost Management, IATA

Challenges & Opportunities with data from connected aircraft

Moderator: **Chris Markou**, Head Operational Cost Management, IATA

Rodolphe Parisot, Chief Digital Officer, Air France Industries KLM Engineering & Maintenance

Pierre-Yves Benain, Portfolio Head e-Aircraft, SITAONAIR

Mark Leach, Partner, Bird & Bird

Matthew Evans, VP Digital Transformation, Airbus

Jan Stövesand, Senior Director Analytics & Data Solutions, Lufthansa Technik AG

Aircraft Operational Data

Challenges and Opportunities

Chris MARKOU

Head of Operational Cost Management, IATA

June 25, 2019

What is Aircraft Operational Data

- Data generated during
  - Flight
  - Maintenance
  - Ground Service

- Data from the aircraft and its operations
  - Massive amounts of data per Flight / Aircraft
  - “Cradle to Grave”

IATA's Role

- Understand how the market and its players are developing
- Work towards maximizing efficiencies using data
- Define and develop data standards as needed
- Addressed all aspects of the data journey
- Ensure that:
  - Airlines are in control of data produced
  - Have choices when selecting providers
  - Allow healthy competition and innovation

Challenges & Opportunities with data from connected aircraft

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Networking Break

SITAONAIR

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A deep dive into the SESAR views on Digitalization

Marouan Chida
Digital Transformation & Innovation Manager at SESAR Joint Undertaking

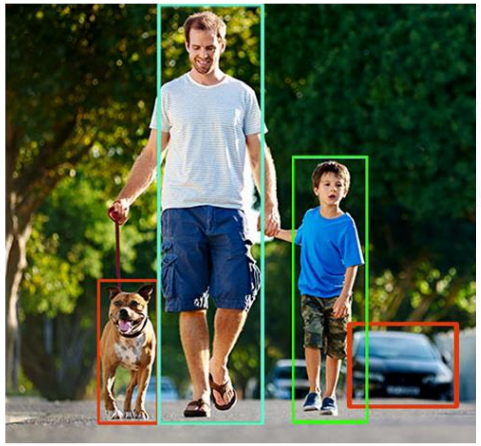
A deep dive into the SESAR views on Digitalization

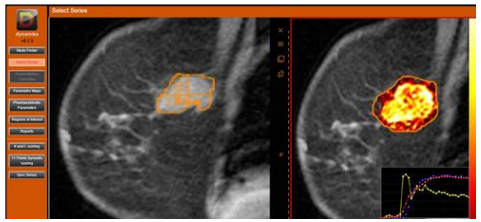
Marouan CHIDA
Head of Digital Transformation & Innovation

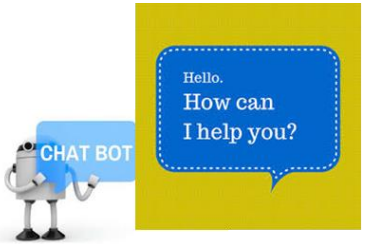
SESAR Joint Undertaking

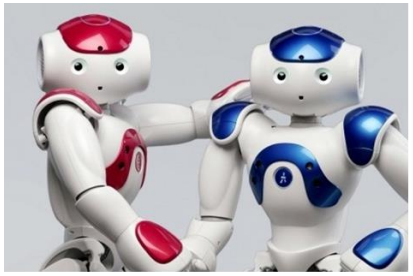
founding members
EUROPEAN UNION
EUROCONTROL

The world around us is changing very fast









A yet challenging ATM context

45 aircraft per hour is the average European En-route capacity today.

Europe needs **3 times more** in the next **15 years** (*)

In **2040** Lack of capacity means **1.5M** flights & **160M** passengers will be unable to fly.

7 times more flight will be **delayed by 1 to 2 hours.** (**)

Sources : (*) Airspace Architecture Study

(**)Challenges of Growth 2018

THE « TECHNOLOGY PILLAR » OF THE European POLICY

SINGLE EUROPEAN SKY REGULATORY FRAMEWORK

EU MASTER PLAN

EASA European Aviation Safety Agency

EUROPEAN DEFENCE AGENCY

EUROCONTROL

ICAO · OACI · ИКАО

SECURITY
- Ensuring high levels of security

COST EFFICIENCY
- Up to **40%** reduction in air navigation services costs per flight

CAPACITY
- Up to **30%** reduction in departure delays
- Up to **10%** additional flights landing at congested airports
- A system capable of handling up to **100%** more traffic

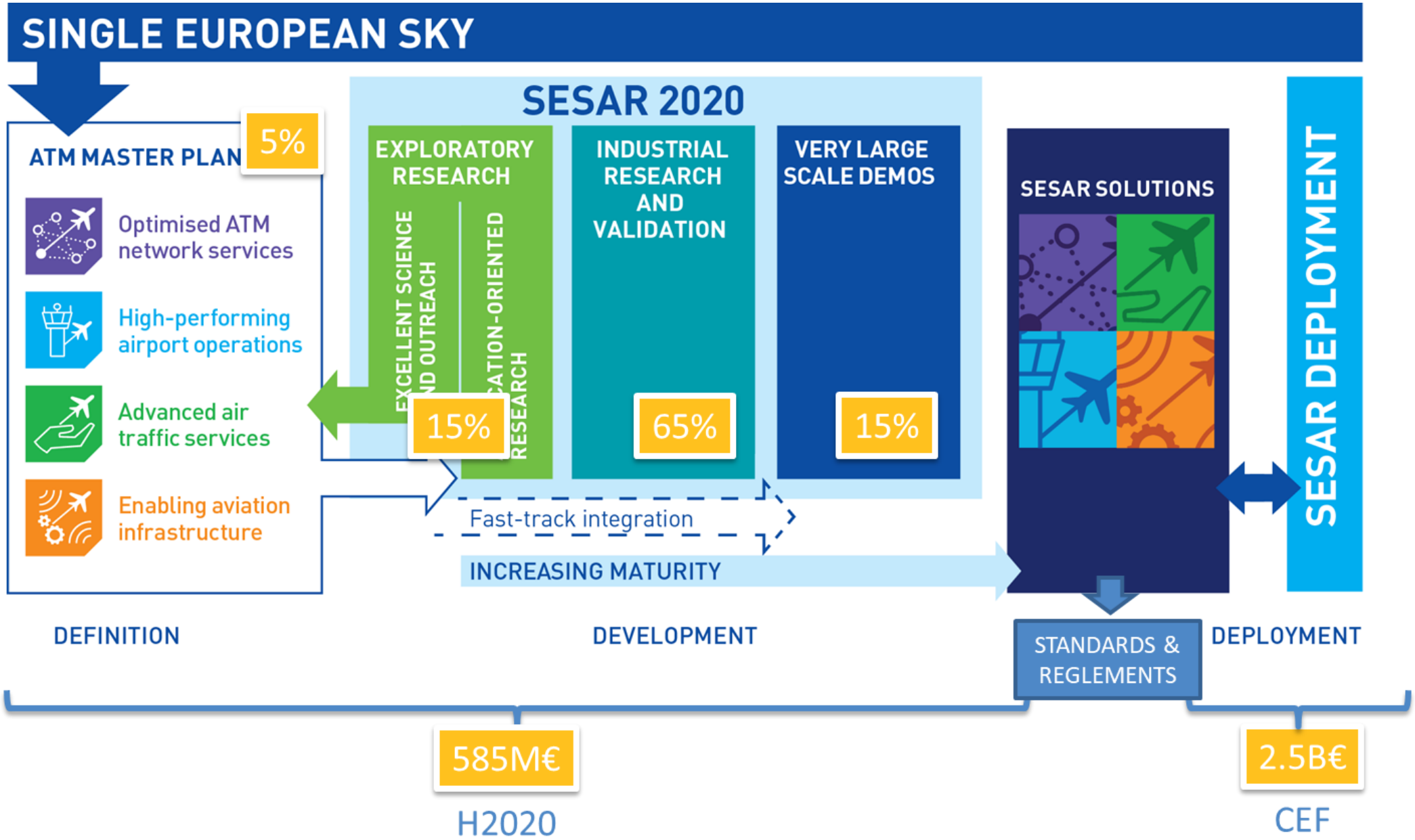
ENVIRONMENT
- Up to **10%** reduction in CO_2 emissions
- Positive impact on noise and air quality

SAFETY
- Improvement by up to a factor of **4**

OPERATIONAL EFFICIENCY
- Up to **6%** reduction in flight time
- Up to **10%** reduction in fuel burn

A Strong public-private partnership

AIRBUS · AT-One · B4 CONSORTIUM · COOPANS REAL COOPERATION, REAL RESULTS · DASSAULT AVIATION · DFS Deutsche Flugsicherung · dgac DSNA · ENAIRE · enav · FREQUENTIS SESAR PARTNERS · Honeywell · indra · LEONARDO · NATMIG · NATS · SEAC · skyguide · THALES

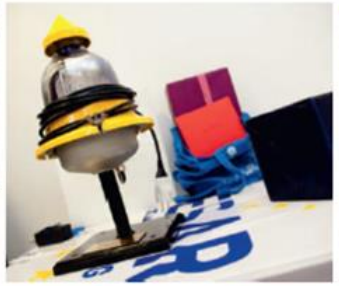

SINGLE EUROPEAN SKY
ATM MASTER PLAN
5%
Optimised ATM network services
High-performing airport operations
Advanced air traffic services
Enabling aviation infrastructure
SESAR 2020
EXPLORATORY RESEARCH
EXCELLENT SCIENCE AND OUTREACH
APPLICATION-ORIENTED RESEARCH
15%
INDUSTRIAL RESEARCH AND VALIDATION
65%
VERY LARGE SCALE DEMOS
15%
Fast-track integration
INCREASING MATURITY
SESAR SOLUTIONS
SESAR DEPLOYMENT
DEFINITION
DEVELOPMENT
STANDARDS & REGLEMENTS
DEPLOYMENT
585M€
H2020
2.5B€
CEF

Some of our activities

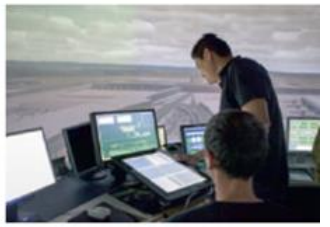
















A pressurised Ait Traffic Management

Key drivers

Disruptive growth in traffic size

- Tens of millions of digitally connected flights in the airspace in 2050
  - 19 millions traditional (IFR) flights
  - 85 million unmanned flights

Automated systems

- Highly automated vehicles
  - Singe pilot operations
  - Urban air mobility
  - Cargo drones

Unprecedent level of hetero-geneity and complexity

- Developments will lead to unprecedented level of heterogeneity and complexity

SESAR ambition/vision

Addressing capacity of controlled airspace requires dramatic transformation

Unprecedented level of heterogeneity & complexity will require further

- **Automation**
- **Connectivity**

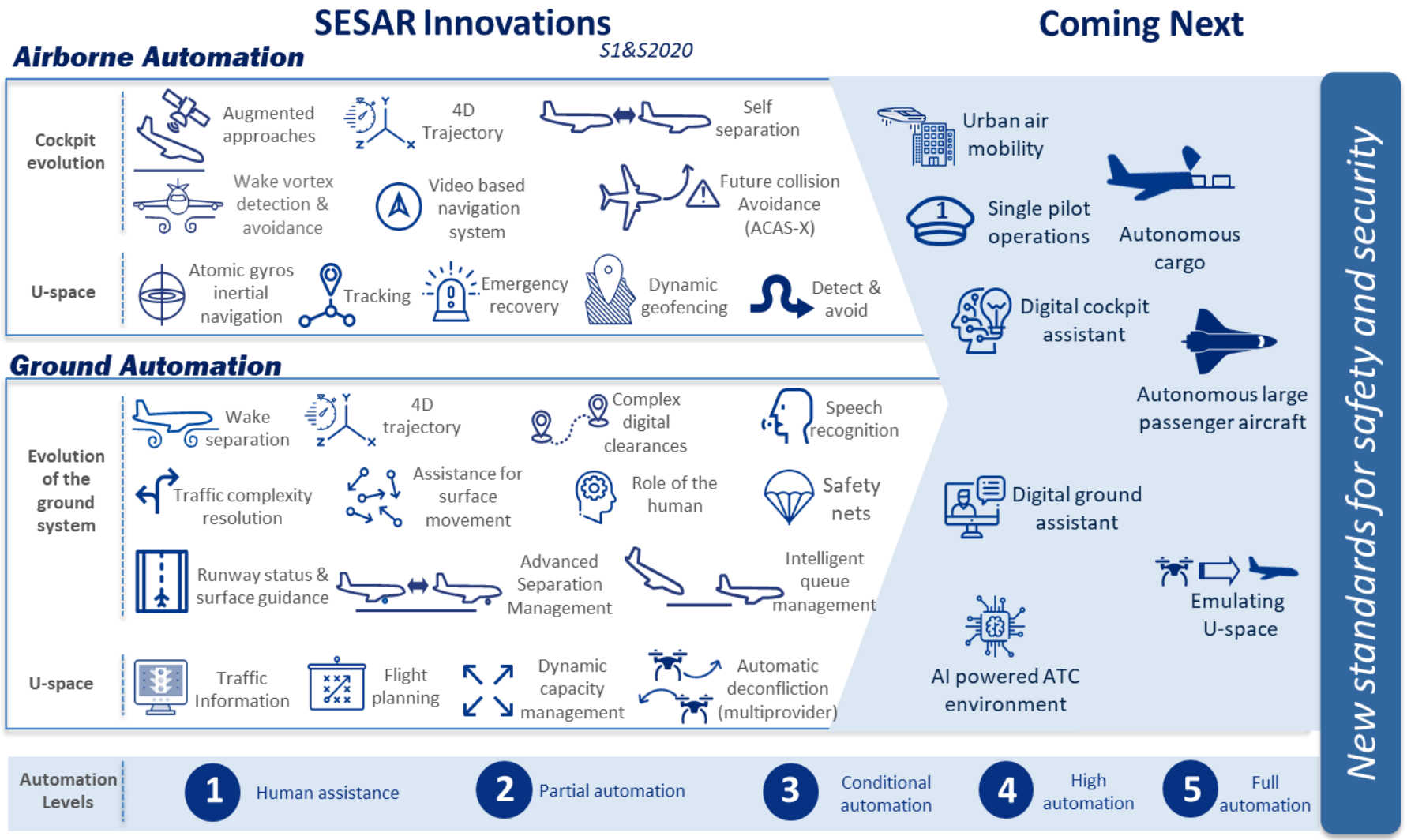
to ensure a **scalable**, **cost-efficient system** with **safety at or above current levels**

Air and ground automation and integration

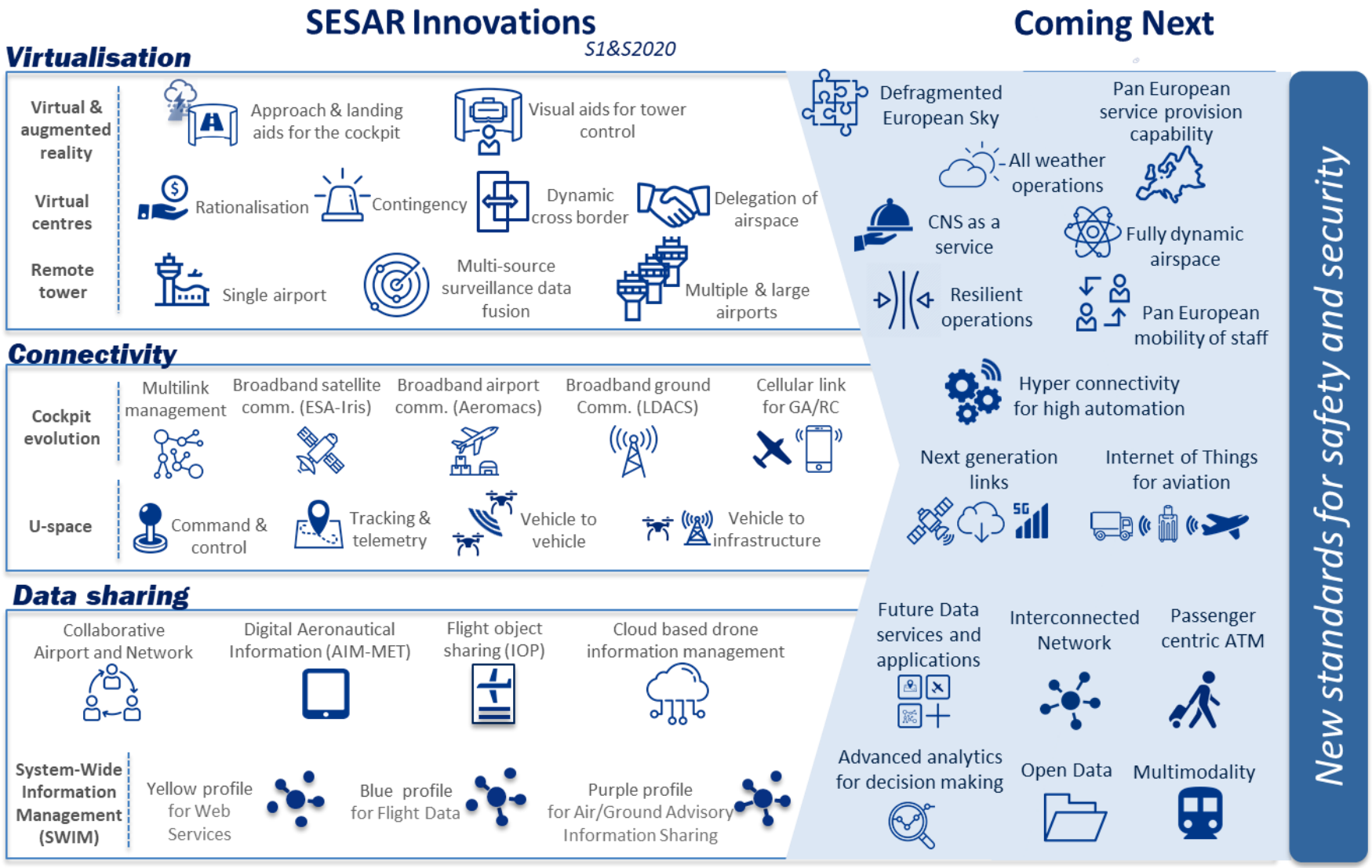
Connectivity

Critical dependency on changes in delivery model and airspace design/use

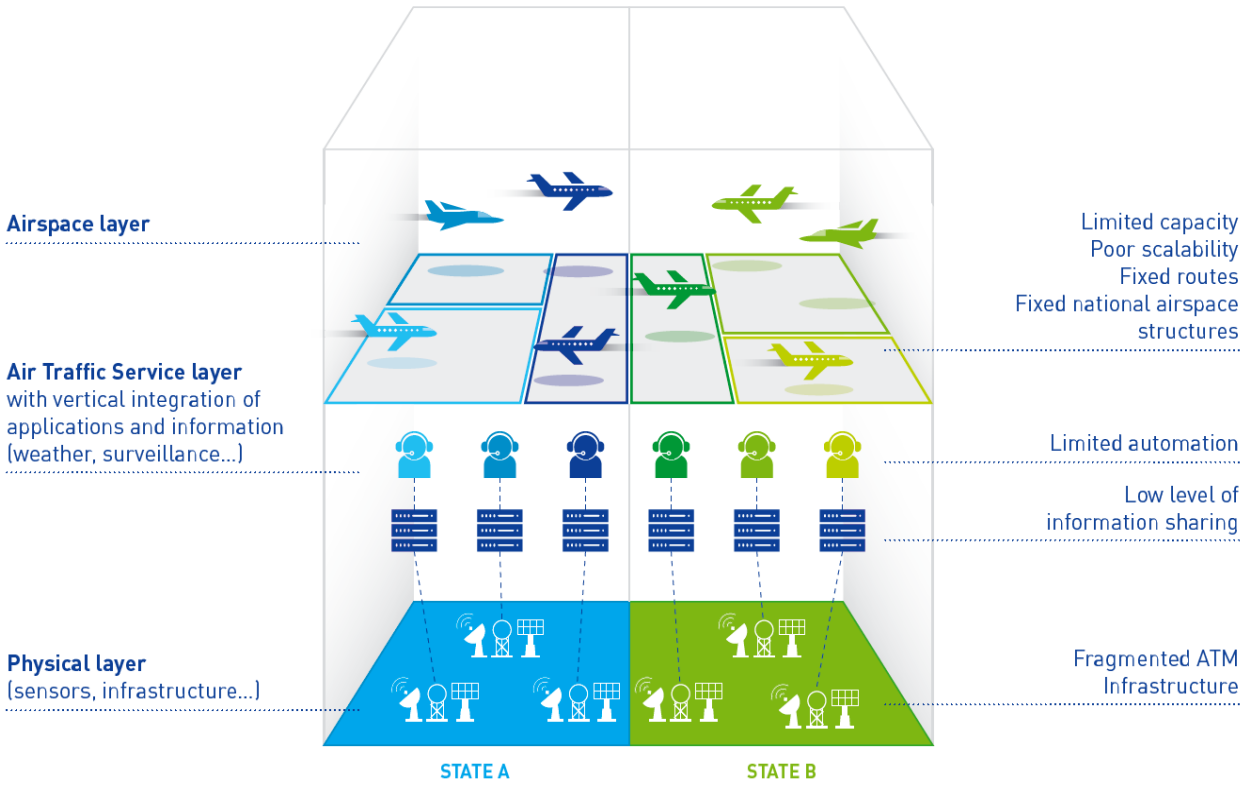
Towards autonomy & automation



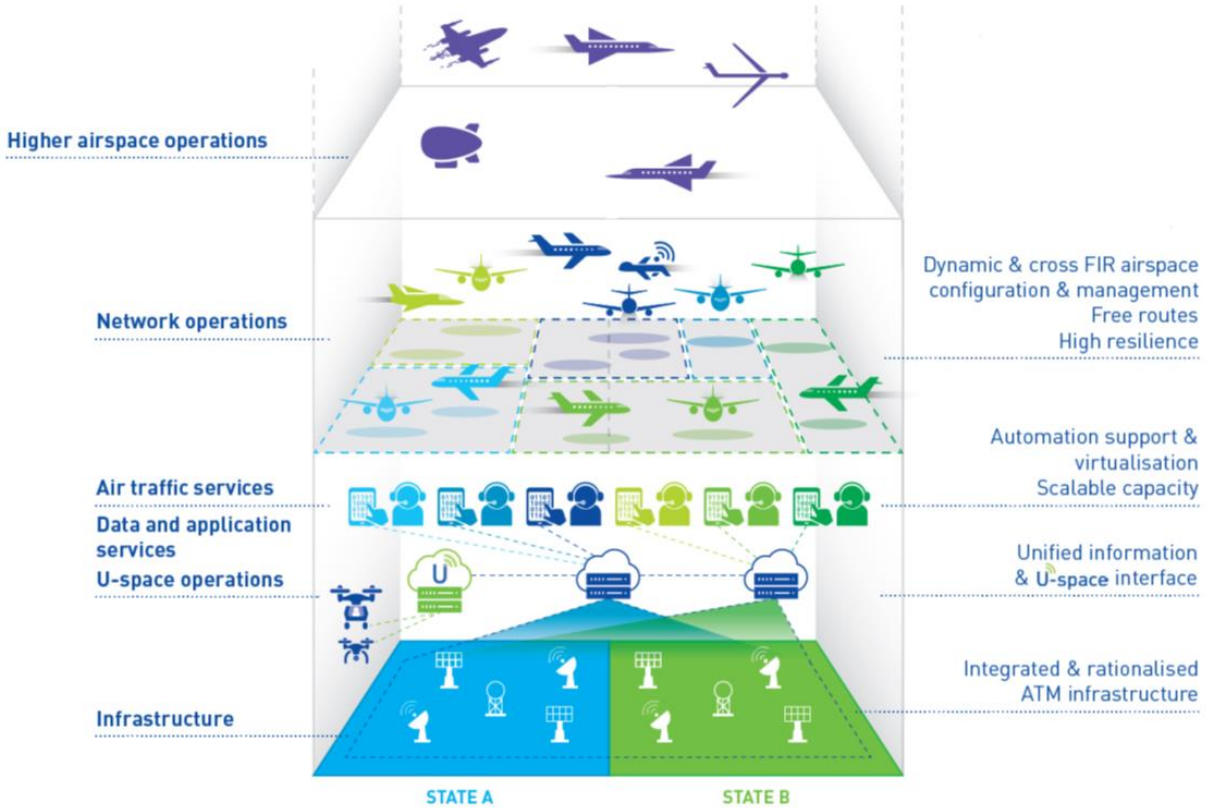
A Connected and Resilient aviation



A transformation of the whole architecture

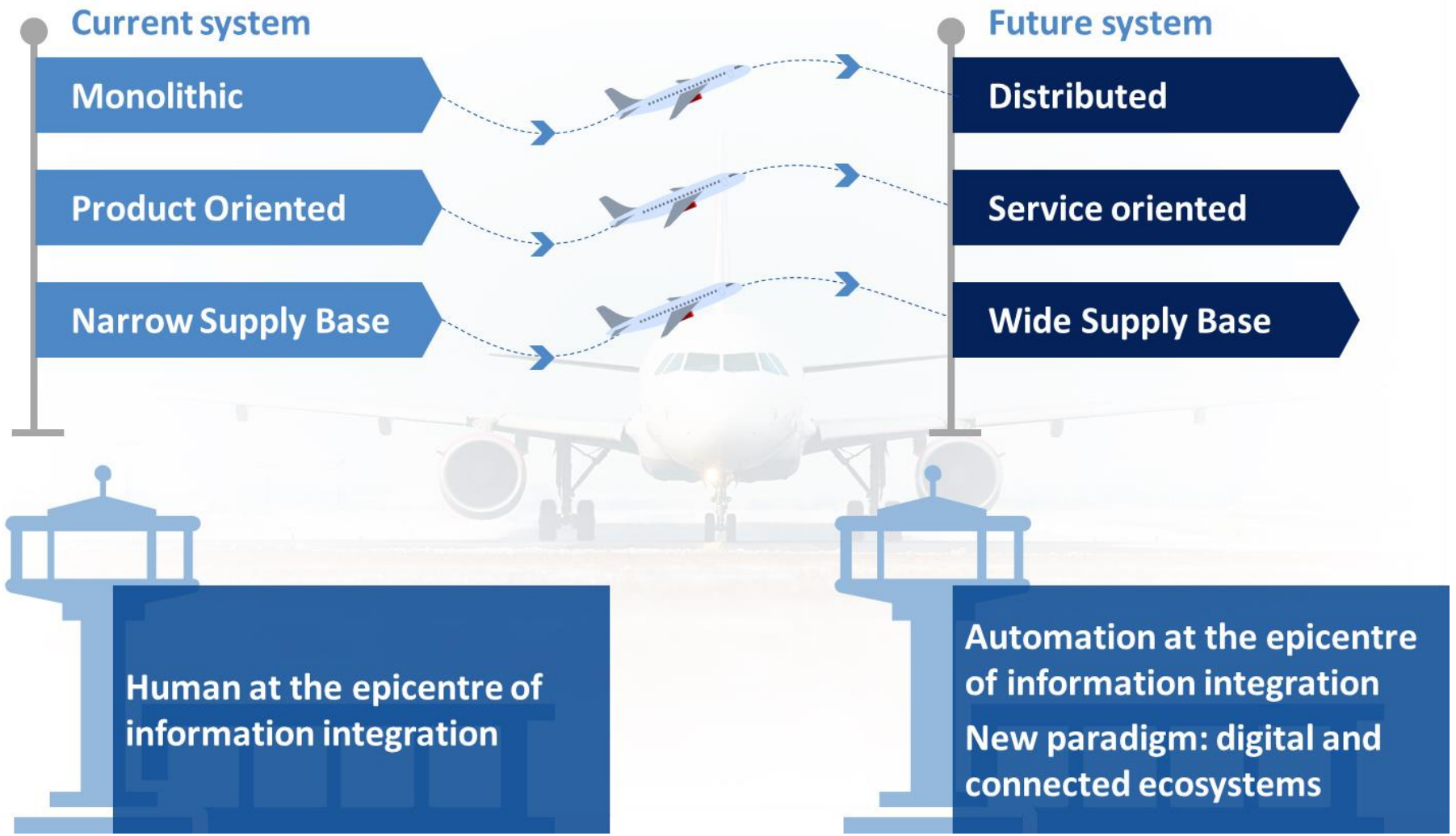


Today



Tomorrow

A major transformation of the whole ecosystem



Thank you very much for your attention!

Case studies and solutions for data sharing

Nigel Howard, Partner, Covington & Burling

Case studies and solutions for data sharing

ADS June 25 2019
Nigel Howard

COVINGTON

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NEW YORK PALO ALTO SAN FRANCISCO SEOUL SHANGHAI WASHINGTON

www.cov.com

This presentation represents the speaker's own personal views

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- Technology and data transactions lawyer
- 20 years of experience in the aviation industry
- Experience includes:
  - data protection and sharing strategies
  - analytics and visualization
  - personalized digital marketing

U.K. Department of Transportation Workshop Stacey Matrix 17 October 2018 reused under the CC BY license

See Open Data Institute report

Case Studies and Solutions for Data Sharing

- Common Structures
- Case studies
  - Flight Safety and Operations
  - Other Industries
- Lessons Learned and Solutions
- Discussion

Organizations need data governance functions and policies

Common Structures for Data Sharing

- Mutually beneficial data partnerships
  - Data co-ops and data commons
- Innovator data partnerships
  - Innovator company is the catalyst
- Channel data partnerships
  - Affiliate programs
  - Reseller programs

Structures are from the book “Data Leverage: Unlocking the surprising growth potential of data partnerships” Christian J. Ward and James J. Ward

Case Studies – Flight Safety

- Global Safety Information Project
  - Toolkits, webinars and podcasts
  - SKYbrary
- ICAO Global Aviation Safety Plan
  - Symposia and workshops
  - iSTARS API Data Service
  - USOAP Continuing Monitoring Analysis
- Aviation Safety Information Analysis and Sharing (FAA)
- Data4Safety (EASA)

Airplane graphic is from ICAO Safety Report 2018 Edition

Case Studies – Flight Operations

- Innovator data partnerships

- Potential for better management of aircraft events & ops
- Need to address 3Cs - control, compliance, commercial

Case Study – Other Industries – Financial Data

Bloomberg

- Data Innovator with Data Channel Partners
  - aggregates financial data from thousands of sources
  - cleanses, normalizes, and enriches data + offers analytics
  - resells data through a variety of licenses and distribution channels
- Resources + Chief Data Officer
  - thousands of analysts, engineers, and other data personnel
  - human and technology resources devoted to data rights compliance

Case Studies – Other Industries – Health Data

HL7® International

- Health Level-7 standard for clinical data exchange
- HL7 International is non-profit Standard Developing Organization with paid membership

All of Us RESEARCH PROGRAM | The Future of Health Begins With You

- Initiative to collect 1M+ patients' genetic samples
- Voluntary enrollment, patients receive data & reports
- Research portal with differing levels of access
- No government / law enforcement access

WIHS Women's Interagency HIV Study

- "Public Data Set" of de-identified data
- Licensed to anyone for public health research
- Other research – Committee review required

Case Studies – Other Industries – Music Industry

Performing Rights Organizations (PROs)

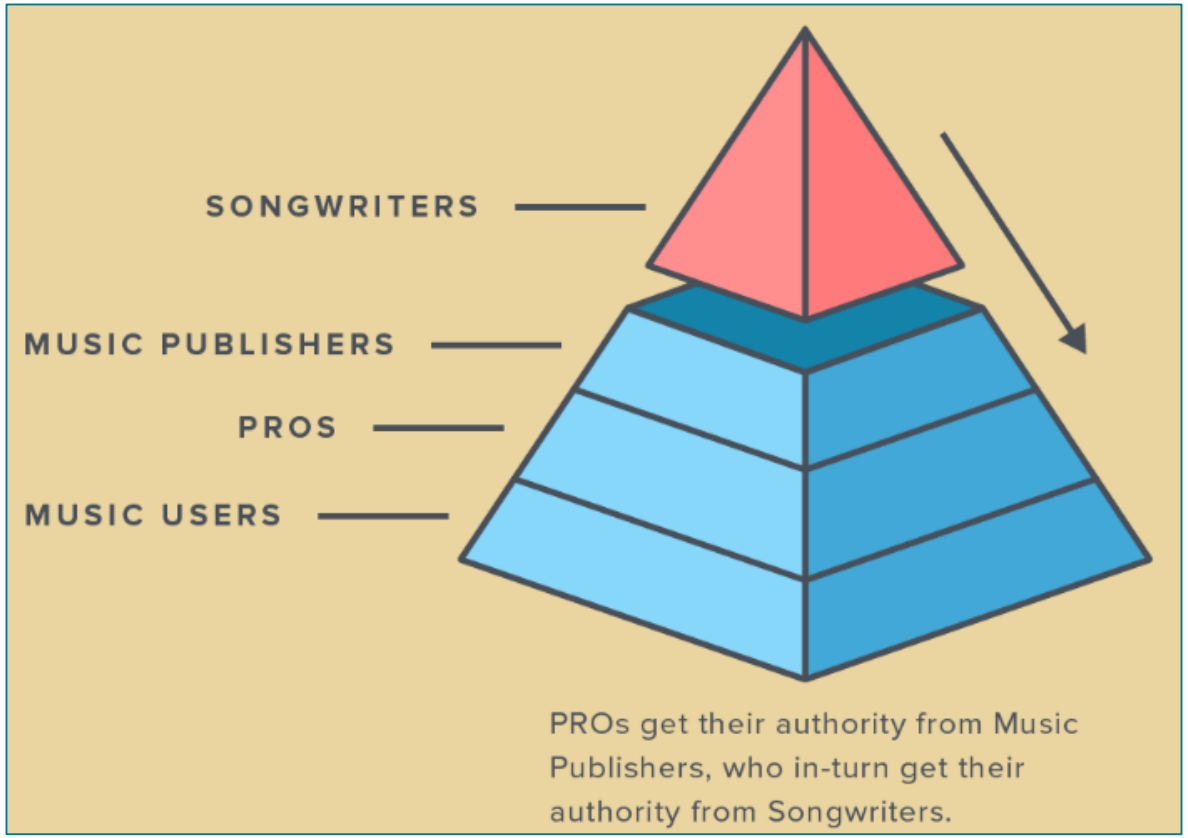

Image Source: https://www.soundstr.com/consent-decree-infographic/

- Challenge – numerous rights holders; difficult to license songs
- Solution – PROs (ASCAP, BMI, SESAC) grant blanket licenses for their entire music catalog
- Collect and distribute royalties
- Monitor licensee compliance
- But new technology allows for collection of actual usage data
  - should licensing change?

Lessons Learned - Flight Safety

- Established SMS and mutual benefit led to partnerships
- Protection for individuals and organizations has been key
  - De-identification
  - Immunity
- Engagement of regulators and international bodies
- Constant need for improvement
  - IoT and data volumes provide opportunities/challenges

Lessons Learned – Other Industries

Data Culture/ Organization

Need a culture and framework that encourages and facilities quality, usage and organization of data.

Compliance/ Rights Management

Establish a framework for managing rights and compliance with contractual and other legal obligations.

Security

Implement appropriate security and incident response mechanisms.

Integrity/Data Ethics

Consider accuracy, integrity and reliability of data, and ethical considerations pertaining to data collection and usage.

Explanations

Consider mechanisms for communicating to stakeholders the intended uses of the data and relevant information pertaining to the data.

Monitoring & Response

Employ mechanisms to monitor compliance with data policies and obligations and respond to actual or suspected violations.

data management best practices

Lessons Learned – Other Industries

- Data management is not enough, also need **business optimization**
  - Leadership
  - Resources
  - Policies
- Mutual benefit partnerships take time and planning
- Innovator and channel data partnerships have great potential
  - but need balanced solutions for
    - control
    - compliance
    - commercial value

Proposed Solutions

- Add leadership + a team
  - Chief Data Officer
  - Multi-disciplinary experience
- Create data governance policies
  - Collection, including managing data quality and standardization
  - Protection
  - Sharing
    - internal
    - external
  - Enforcement

Thank you

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Use of the Blockchain technology to improve aircraft operations

Martin Mitev, Captain & Assistant SVP Flight Operations, airBaltic

Blockchain in Flight Operations

By Martin Mitev
Airline Captain
Assistant to SVP Flight Operations
Flight Operations Futurist

TOC

- Focus
- Assets
- Status Quo — 10 mins
- Technology
- Adoption — 15 mins
- Use Cases — 25 mins
- Challenges
- Takeaways — 30 mins

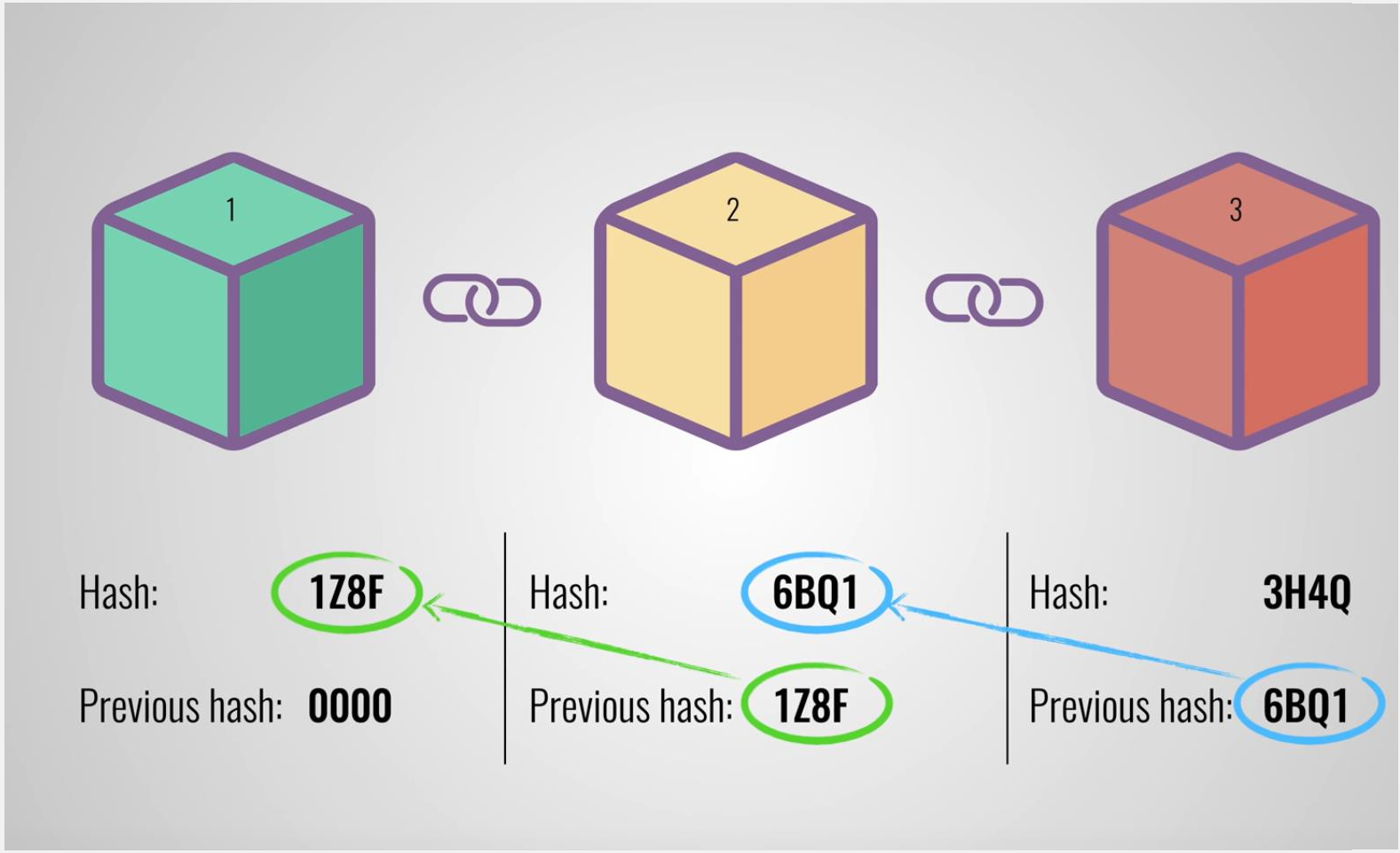
Flight Operations' Core

- What is Flight Operations in this context?
  - Using aircraft. (ICAO, 2019).
  - That includes preparing it, crewing it, flight planning, operational execution, and post-flight maintenance.
- What is Flight Operations obsessed with?
  - Safety
  - Efficiency
  - Data Integrity (Audits)

Assets

The “Just Fine” Status Quo

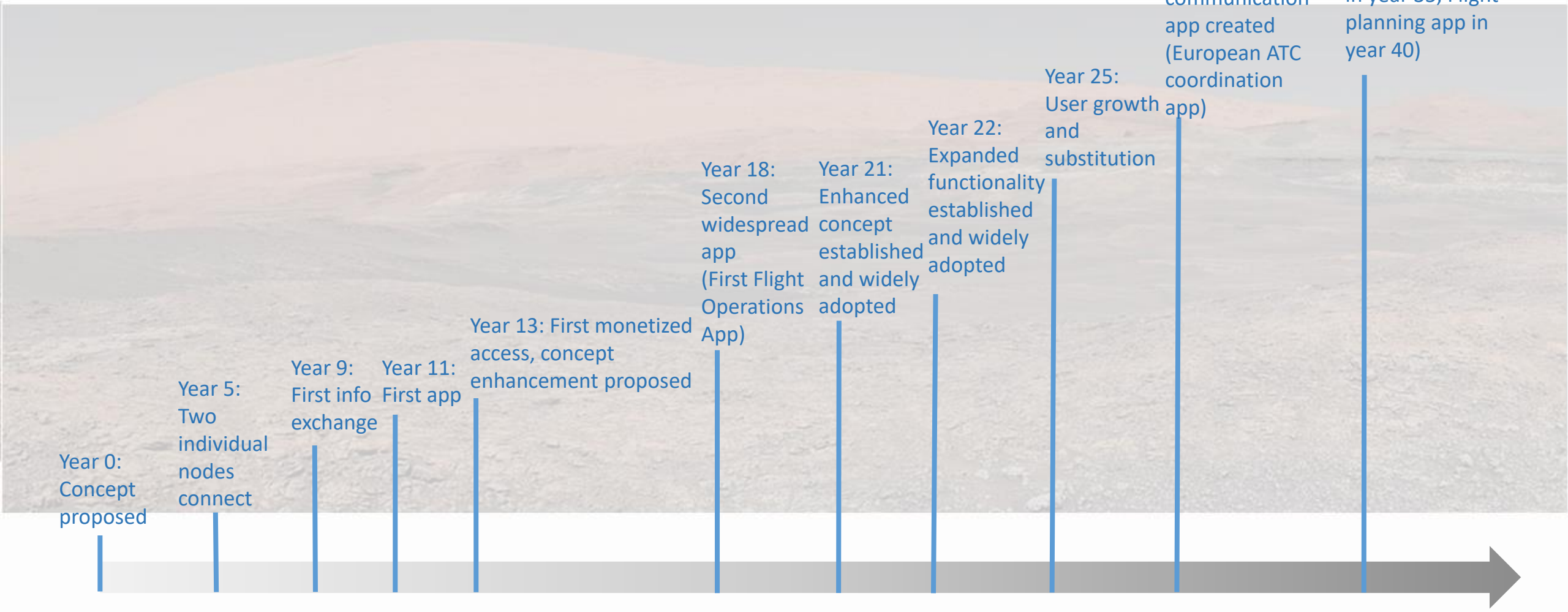
What Is a Blockchain?



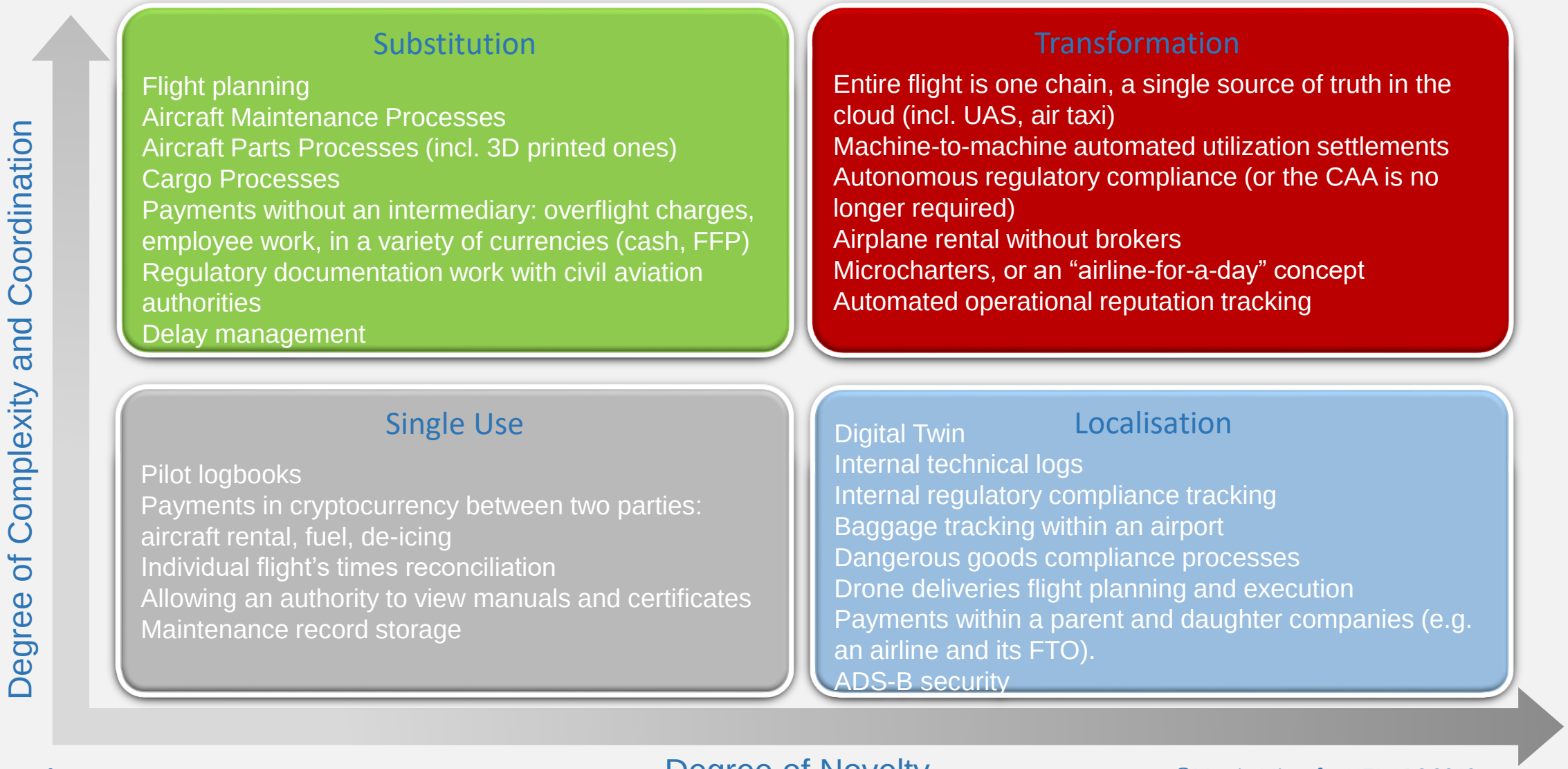
Requirements:

- One source of truth
- Records created once
- Multiple writers
- Trust between them

A Has-Been Had



What's a Blockchain Future Look Like?



Source: Adapted from (Iansiti and Lakhani, 2017)

What's a Blockchain Future Need?

- Human talent.
- A strategy.
- One data standard. The means to ingest existing data into this schema.
- Trust through a "working together" model.
- A number of fully operationalized, scaled-out deployments running for several years.
- More dapps than "smart contracts", solving throughput and scalability challenges.

Kids Don’t See the World with History Attached

- Implementations take time. Stable ones take even longer.
- Pick a single use case. Minimise risk.
- Consider how blockchain relates to other value-generating technologies (IoT for instance).
- It might happen to you if you don’t want to tinker with it.
- Coordinated action.
- Once on your way, would you be willing to revert to paper?

Walking on Mars

Image source: (NASA, 2018)

Networking Dinner

AEGEAN

A STAR ALLIANCE MEMBER

ATHENS INTERNATIONAL AIRPORT ELEFTHERIOS VENIZELOS

Buses depart from the Lobby area at 19:00 sharp

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